SESSION 12: LOOSE ENDS IN VALUATION – II
ACQUISITION ORNAMENTS – SYNERGY, CONTROL AND COMPLEXITY
1. The Value of Synergy

Synergy is created when two firms are combined and can be either financial or operating.

Operating Synergy accrues to the combined firm as:

- Strategic Advantages
  - Higher returns on new investments
    - Higher ROC
    - Higher Growth Rate
  - More new Investments
    - Higher Reinvestment
    - Higher Growth Rate
  - More sustainable excess returns
    - Longer Growth Period

- Economies of Scale
  - Cost Savings in current operations
    - Higher Margin
    - Higher Base-year EBIT

Financial Synergy:

- Tax Benefits
  - Lower taxes on earnings due to higher depreciation - operating loss carryforwards
  - Higher debt ratio and lower cost of capital

- Added Debt Capacity

- Diversification?
  - May reduce cost of equity for private or closely held firm
Valuing Synergy

1. The firms involved in the merger are valued independently, by discounting expected cash flows to each firm at the weighted average cost of capital for that firm.

2. The value of the combined firm, with no synergy, is obtained by adding the values obtained for each firm in the first step.

3. The effects of synergy are built into expected growth rates and cashflows, and the combined firm is re-valued with synergy.

   Value of Synergy = Value of the combined firm, with synergy - Value of the combined firm, without synergy
## Valuing Synergy: P&G + Gillette

<table>
<thead>
<tr>
<th></th>
<th>P&amp;G</th>
<th>Gillette</th>
<th>Combined: No Synergy</th>
<th>Combined: Synergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Cashflow to Equity</td>
<td>$5,864.74</td>
<td>$1,547.50</td>
<td>$7,412.24</td>
<td>$7,569.73</td>
</tr>
<tr>
<td>Growth rate for first 5 years</td>
<td>12%</td>
<td>10%</td>
<td>11.58%</td>
<td>12.50%</td>
</tr>
<tr>
<td>Growth rate after five years</td>
<td>4%</td>
<td>4%</td>
<td>4.00%</td>
<td>4.00%</td>
</tr>
<tr>
<td>Beta</td>
<td>0.90</td>
<td>0.80</td>
<td>0.88</td>
<td>0.88</td>
</tr>
<tr>
<td>Cost of Equity</td>
<td>7.90%</td>
<td>7.50%</td>
<td>7.81%</td>
<td>7.81%</td>
</tr>
<tr>
<td>Value of Equity</td>
<td>$221,292</td>
<td>$59,878</td>
<td>$281,170</td>
<td>$298,355</td>
</tr>
</tbody>
</table>

- Annual operating expenses reduced by $250 million
- Slightly higher growth rate
- Value of synergy $17,185
2. The Value of Control

- The value of the control premium that will be paid to acquire a block of equity will depend upon two factors -
  - Probability that control of firm will change: This refers to the probability that incumbent management will be replaced. This can be either through acquisition or through existing stockholders exercising their muscle.
  - Value of Gaining Control of the Company: The value of gaining control of a company arises from two sources - the increase in value that can be wrought by changes in the way the company is managed and run, and the side benefits and perquisites of being in control.

\[
\text{Value of Gaining Control} = \text{Present Value (Value of Company with change in control - Value of company without change in control)} + \text{Side Benefits of Control}
\]

Aswath Damodaran
Current Cashflow to Firm

EBIT(1-t) : 436 HRK
- Nt CpX : 3 HRK
- Chg WC : -118 HRK
= FCFF : 551 HRK

Reinv Rate = (3-118)/436 = -26.35%;
Tax rate = 17.35%
Return on capital = 8.72%

Expected Growth from new inv.
7083*.0969 = 0.0686 or 6.86%

Reinvestment Rate = 70.83%
Return on Capital = 9.69%

Terminal Value = 365/(.0992-.04) = 6170 HRK

HKR Cashflows

Year 1 2 3 4 5
EBIT (1-t) HRK 466 HRK 498 HRK 532 HRK 569 HRK 608
- Reinvestment HRK 330 HRK 353 HRK 377 HRK 403 HRK 431
FCFF HRK 136 HRK 145 HRK 155 HRK 166 HRK 177

Discount at $ Cost of Capital (WACC) = 10.7% (.974) + 5.40% (0.026) = 10.55%

Cost of Equity:
10.70%

Cost of Debt:
(4.25% + 0.5% + 2%)(1-.20) = 5.40%

Weights:
E = 97.4% D = 2.6%

Riskfree Rate:
HRK Riskfree Rate = 4.25%

Beta: 0.70
Mature market premium: 4.5%
Unlevered Beta for Sectors: 0.68
Firm's D/E Ratio: 2.70%

CRP for Croatia:
Lambda 0.68 x Country Default Spread 2% = 3%

CRP for Central Europe:
Lambda 0.42 x Hel Equity Mkt Vol 1.50 = 3%

On May 1, 2010
AG Pfd price = 279 HRK
AG Common = 345 HRK

Value non-voting share:
335 HRK/share
Adris Grupa: 4/2010 (Restructured)

**Current Cashflow to Firm**

| EBIT/(1-t) | HRK 436 |
| Nt CpX     | HRK 3  |
| Chg WC     | HRK -118 |
| FCFF       | HRK 551 |

Reinv Rate = (3-118)/436 = -26.35%
Return on capital = 8.72%

**EBIT**:

- Nt CpX: 3 HRK
- Chg WC: -118 HRK
= FCFF: 551 HRK

**Return on Capital** = (3-118)/436 = -26.35%
Tax rate = 17.35%

**Expected Growth from new inv.**

- 70.83% x 0.01054 = 0.72%
or 6.86%

**Stable Growth**

- g = 4%; Beta = 0.80
- Country Premium = 2%
- Cost of capital = 9.65%
- Tax rate = 20.00%
- ROC = 9.94%
- Reinvestment Rate = g/ROC = 4/9.65 = 41.47%

**Terminal Value**

5 = 367/(0.0965 - 0.04) = 6508 HRK

**Discount at $ Cost of Capital (WACC)** = 11.12% x 0.90 + 8.20% x 0.10 = 10.55%

**Cost of Equity**

= 11.12%

**Cost of Debt**

= 8.20%

**Weights**

E = 90% D = 10%

**Riskfree Rate**

HRK Riskfree Rate = 4.25%

**Beta**

0.75

**Mature market premium**

4.5%

**Unlevered Beta for Sectors**

0.68

Firm’s D/E Ratio: 11.1%

**Lambda**

0.68 x CRP for Croatia (3%)
0.42 x CRP for Central Europe (3%)

**Country Default Spread**

2%

**Rel Equity Mkt Vol**

1.50

**On May 1, 2010**

AG Pfd price = 279 HRK
AG Common = 345 HRK

**Average from 2004-09**

70.83%

**Adris Grupa: 4/2010 (Restructured)**

7 Aswath Damodaran
The value of control at Adris Grupa can be computed as the difference between the status quo value (5469) and the optimal value (5735).

In this case, we have two values for Adris Grupa’s Equity.

\[
\text{Status Quo Value of Equity} = 5,469 \text{ million HKR}
\]

All shareholders, common and preferred, get an equal share of the status quo value.

\[
\text{Value for a non-voting share} = \frac{5469}{(9.616+6.748)} = 334 \text{ HKR/share}
\]

The value of the voting shares derives from the capacity to change the way the firm is run

\[
\text{Optimal value of Equity} = 5,735 \text{ million HKR}
\]

Value of control at Adris Grupa = 5,735 – 5469 = 266 million HKR

Only voting shares get a share of this value of control

\[
\text{Value per voting share} = 334 \text{ HKR} + \frac{266}{9.616} = 362 \text{ HKR}
\]
3. A Discount for Complexity: An Experiment

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Income</td>
<td>$1 billion</td>
<td>$1 billion</td>
</tr>
<tr>
<td>Tax rate</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>ROIC</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Expected Growth</td>
<td>5%</td>
<td>5%</td>
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<tr>
<td>Cost of capital</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>Business Mix</td>
<td>Single Business</td>
<td>Multiple Businesses</td>
</tr>
<tr>
<td>Holdings</td>
<td>Simple</td>
<td>Complex</td>
</tr>
<tr>
<td>Accounting</td>
<td>Transparent</td>
<td>Opaque</td>
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</table>

Which firm would you value more highly?
## Measuring Complexity: Volume of Data in Financial Statements

<table>
<thead>
<tr>
<th>Company</th>
<th>Number of pages in last 10Q</th>
<th>Number of pages in last 10K</th>
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<tbody>
<tr>
<td>General Electric</td>
<td>65</td>
<td>410</td>
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<tr>
<td>Microsoft</td>
<td>63</td>
<td>218</td>
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<tr>
<td>Wal-mart</td>
<td>38</td>
<td>244</td>
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<td>Exxon Mobil</td>
<td>86</td>
<td>332</td>
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<td>Pfizer</td>
<td>171</td>
<td>460</td>
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<td>Citigroup</td>
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<td>720</td>
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<td>Johnson &amp; Johnson</td>
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<td>218</td>
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<td>IBM</td>
<td>85</td>
<td>353</td>
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## Measuring Complexity: A Complexity Score

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor</th>
<th>Follow-up Question</th>
<th>Answer</th>
<th>Weighing factor</th>
<th>Grade Score</th>
<th>GE Score</th>
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<tbody>
<tr>
<td>Operating Income</td>
<td>1. Multiple businesses</td>
<td>Number of businesses (with more than 10% of revenues) =</td>
<td>1</td>
<td>2.00</td>
<td>2</td>
<td>30</td>
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<tr>
<td></td>
<td></td>
<td>Percent of operating income =</td>
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<td>10%</td>
<td>1</td>
<td>0.8</td>
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<tr>
<td></td>
<td></td>
<td>Percent of operating income =</td>
<td></td>
<td>0%</td>
<td>0</td>
<td>1.2</td>
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<tr>
<td></td>
<td></td>
<td>Percent of operating income =</td>
<td></td>
<td>15%</td>
<td>5</td>
<td>0.75</td>
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<td>Tax Rate</td>
<td>1. Income from multiple locales</td>
<td>Percent of revenues from non-domestic locals =</td>
<td>Yes or No</td>
<td>No</td>
<td>Yes=2</td>
<td>2</td>
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<td></td>
<td></td>
<td>Yes=3</td>
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<td>Capital Expenditure</td>
<td>1. Volatile capital expenditures</td>
<td>Yes or No</td>
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<td>0</td>
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<tr>
<td>Working Capital</td>
<td>1. Unspecified current assets and current liabilities</td>
<td>Yes or No</td>
<td>No</td>
<td>Yes=3</td>
<td>0</td>
<td>0</td>
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<td></td>
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<td>Yes=4</td>
<td></td>
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<tr>
<td>Expected Growth Rate</td>
<td>1. Off-balance sheet assets and liabilities</td>
<td>Yes or No</td>
<td>No</td>
<td>Yes=3</td>
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<td>0</td>
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<td></td>
<td></td>
<td>Yes=4</td>
<td></td>
<td>0</td>
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<td>0</td>
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<td></td>
<td></td>
<td>Yes=6</td>
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<td>2</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
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<td>Yes=8</td>
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<td>2</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes=10</td>
<td></td>
<td>5</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>Yes=12</td>
<td></td>
<td>5</td>
<td></td>
<td>0</td>
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<tr>
<td>Cost of Capital</td>
<td>1. Multiple businesses</td>
<td>Number of businesses (more than 10% of revenues) =</td>
<td>1</td>
<td>1.00</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percent of revenues =</td>
<td></td>
<td>50%</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes or No</td>
<td>Yes=2</td>
<td>2</td>
<td></td>
<td>0</td>
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<td>2</td>
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<td></td>
<td></td>
<td>Yes=12</td>
<td></td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Operating Assets</td>
<td>Minority holdings as percent of book assets</td>
<td>Minority holdings as percent of book assets =</td>
<td>0%</td>
<td>20.00</td>
<td>0</td>
<td>0.8</td>
</tr>
<tr>
<td>Firm-to-Equity Ratio</td>
<td>Consolidation of subsidiaries</td>
<td>Majority interest as percent of book value of equity =</td>
<td>0.65</td>
<td>20.00</td>
<td>12.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Per Share Value</td>
<td>Shares with different voting rights</td>
<td>Does the firm have shares with different voting rights? =</td>
<td>Yes</td>
<td>Yes=10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equity options outstanding</td>
<td>0%</td>
<td>10.00</td>
<td>0</td>
<td>0.28</td>
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<tr>
<td>Complexity Score</td>
<td></td>
<td>Complexity Score =</td>
<td>48.85</td>
<td>90.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dealing with Complexity

- In Discounted Cashflow Valuation
  - The Aggressive Analyst: Trust the firm to tell the truth and value the firm based upon the firm’s statements about their value.
  - The Conservative Analyst: Don’t value what you cannot see.
  - The Compromise: Adjust the value for complexity
    - Adjust cash flows for complexity
    - Adjust the discount rate for complexity
    - Adjust the expected growth rate/length of growth period
    - Value the firm and then discount value for complexity

- In relative valuation
  - You may be able to assess the price that the market is charging for complexity:
  - With the hundred largest market cap firms, for instance:
    \[ \text{PBV} = 0.65 + 15.31 \text{ROE} - 0.55 \text{Beta} + 3.04 \text{Expected growth rate} - 0.003 \text{# Pages in 10K} \]